

b. Fore tibiæ compressed, not dilated.

[To this section belongs the European *A. varius*.]

8. *Acanthoderes maculatissimus*, n. sp.

A. curtus, subdepressus, tomento ochraceo-fulvo vestitus: elytris lituris nonnullis griseis, punctis innumeris lineaque transversa undata pone medium brunneis. Long. 6 lin. ♂ ♀.

Head punctured, fulvous varied with brown. Antennæ brown, spotted and ringed with grey. Thorax with the lateral tubercles produced and pointed at the apex, and with two obtuse dorsal elevations and a shining central line; the interstices punctured; in colour minutely variegated with fulvous and brown. Elytra subtrigonal, briefly sinuate-truncate at the apex, the external angles produced; punctured throughout, the centro-basal ridge apparent only at the extreme base, ochrey fulvous, silky, studded with small brown spots, which everywhere cover the punctures: there are a few light-grey marks, and behind the middle a transverse dark-brown zigzag line. Body beneath ashy brown. Legs variegated with ashy, dusky brown, and fulvous. The fringe of the male fore tarsi is black. The prosternum is simple, the mesosternum subvertical in front.

At Santarem; on hanging woody climbers in new plantations.

9. *Acanthoderes thoracicus*, White.

Acanthoderes thoracicus, White, Cat. Long. Col. in Brit. Mus. ii. p. 359.

To the description quoted above I will add that the third to the sixth antennal joints are acutely produced at their apices beneath, as in *A. Egaensis* and other species; the body is depressed; the elytra are subtrigonal, with the apices slightly truncated, and have always an oblique dark-brown streak on the disk; the centro-basal ridges are narrow, disappear about the middle of the elytra, and leave a depressed space between them. The prosternum is simply rounded behind, the mesosternum vertically inclined in front. Long. 6–7½ lin. ♂ ♀.

This is a common species, on branches of felled trees, in the forest throughout the Amazon region. It is also found, I believe, at Cayenne.

[To be continued.]

XXIV.—On the History of the 'Maté' Plant, and the different Species of *Ilex* employed in the Preparation of the 'Yerba de Maté,' or Paraguay Tea. By JOHN MIERS, F.R.S., F.L.S. &c.

NOTWITHSTANDING the seemingly authoritative evidence we have on record concerning it, I have entertained a doubt for many years past in regard to the plant which produces the celebrated

Paraguay Tea, the favourite beverage of the Spanish South Americans. I will here detail the results of my investigations into this subject, and will preface the inquiry by a short history of the events which had great influence on the production and trade of this article of commerce: these events are the more interesting as they are in some degree connected with the biography of the celebrated botanist Bonpland, to whom I am indebted for the knowledge of the true plants which produce the Yerba.

In the settlements of the Indians in Paraguay and along the borders of the River Paraná, under the dominion of the Spanish government, administered as they were at that period by the Jesuits, the preparation of the Yerba constituted the principal branch of industry of the country. The plant from which the Maté is prepared was first mentioned by Azara, as growing wild in many parts of Paraguay. It is found in great abundance in all the moist valleys of the ramifications that branch from the main chain of mountains called Maracajú, which, rising in that part of Paraguay bordering upon Matto Grosso, in lat. 19° S., and tending S.E., divides the northern half of the country into two distinct watersheds—the rivers flowing westward running into the river Paraguay, and those eastward into the Paraná. This chain, after a length of 150 miles, suddenly takes a more easterly course, and is soon cut through by the latter river at a place called Sete Quedas (seven cataracts or large rapids), in lat. 24° S.; it then crosses into the Brazilian province of San Páolo, through which it runs nearly due east for 300 miles, as far as Curitiba, where it becomes blended with the main chain of the Serra do Mar, that skirts the coasts of the southern provinces of Brazil. The Yerba-tree is found more or less abundantly in all the valleys that branch out of this extensive range of mountains, but principally, as before mentioned, in the northern portion of Paraguay. Wilcox, in his 'History of Buenos Ayres,' mentions three kinds of Yerba known in commerce—"the *Caácuy*, *Caámini*, and *Caáguazú*:" the first is there said to be prepared from the young leaves recently expanded from the buds; the second is from the full-grown leaves, carefully picked and separated from the twigs; and the third from the older leaves, carelessly broken up with the young branchlets: all being half-roasted by a crude process. But I have always been of opinion that these several qualities were prepared from different species of *Ilex*. The Guarani general term, *Caá*, signifies a leaf or branch; and in the Missions, the names of *Caá-riri* and *Caá-úna* or *Caúna* are given to the different kinds of *Ilex*. The prepared leaves have always borne the name of *Yerba* among the Spaniards, its infusion being made in a peculiar kind of cup

called a *Maté*. In the Portuguese Missions the Yerba is called *Caúna*, and in most of the Brazilian provinces it is known by the name of *Congonha**.

Under the Spanish government, the principal harvests of Yerba were made in the valleys bordering upon the river Ypané, a tributary of the Rio Paraguay,—the produce there collected being conveyed to the town of Villareal, at its mouth, in lat. 23° 30' S., and thence transported down the River Paraguay, in large pontoons, to the metropolitan town Assuncion. Although the largest harvests were obtained in Paraguay, considerable quantities in addition were raised in the various settlements of Indians founded by the Jesuits beyond its limits. These were called Missions, and were thirty in number, twenty-three being situated between the rivers Paraná and Uruguay, and seven on the left bank of the latter river, in the province of Entrerios. These, as well as all the extensive settlements in Paraguay proper, were at their greatest prosperity at the period of the expulsion of the Jesuits in 1768; but, owing to the defective management of the Indians under the subsequent rule of the Spanish authorities, the commerce in Yerba languished considerably. In 1810 the quantity raised was supposed to amount to five millions of pounds; but Mr. Robertson states that in 1812 (two years after Paraguay became independent) the exports of Yerba still amounted to eight millions of pounds, or 3750 tons, from the port of Assuncion alone, at which period, too, its cultivation in the Missions had become almost annihilated. In all these Missions, during the devastating wars then raging throughout the Argentine provinces, the Indian settlers were robbed of all their cattle and horses, their farms were destroyed, the men forced to become soldiers, and otherwise were so oppressed, that the greater number sought a refuge in Paraguay. Some idea of the extent of this depopulation may be formed from the records preserved of the seven Uruguay Missions, which in 1768 had a population of 30,000, nearly all Indians; in 1801, when taken by the Portuguese, they numbered only 14,000; by the subsequent wars they were further reduced, in 1814, to 6395; and in 1821, at the census taken when St.-Hilaire was there, they scarcely amounted to 3000 individuals of all ages. This celebrated botanist remarks concerning them—“En un mot, la province des Missions, naguère si florissante, offre aujourd'hui le tableau de toutes les misères qui affligent notre espèce, et dans peu, l'on y chercherait vainement des Indiens.” Owing to political causes subsequent to 1812, the trade with Paraguay became in great measure suspended; so that the Yerba from the Curitíba Mountains was much sought for, and

* Pronounced *Congonia*.

conveyed to the nearest port of Paranaguá, on the Brazilian coast; and hence the Yerba de Paranaguá (though considered inferior in flavour to the Yerba de Paraguay) commanded a ready sale: but the quantity obtained from this source was inconsiderable in comparison with the amount that still found its way from Paraguay.

At this period, Paraguay was governed by the renowned Dictator, Doctor Francia. That country had been one of the earliest of the Spanish provinces in assuming its independence: this occurred in 1810, when Francia was one of the Junta deputed to frame a constitution after the republican model, with the executive power confided to two consuls chosen by the people. At the end of the second year he was elected one of the consuls; but soon after, his colleague was superseded, and all the power became vested in his hands. His government, in most respects, proved well suited to a race of Indians still imbued with the highest respect for the paternal rule of the Jesuits, under whom they were accustomed to an implicit obedience to one superior head. The population everywhere spoke the Guarani tongue, and only the more educated men in authority and the few settlers from the mother country could understand the Spanish language; on the other hand, the Indian language was not spoken in any of the Argentine Provinces. The system of government adopted in Paraguay was completely at variance with that followed in all the Argentine Provinces, where the rule was based upon the more democratic model of the North American States, which enjoined the annual election of the municipal officers, whose executive power was always supposed to be controlled by a representative and legislative assembly triennially chosen by universal suffrage. The Paraguayans, however, preferred their own system, and were so fully confident in the talents and integrity of Dr. Francia, and so well satisfied with his rule, that he was soon afterwards, by universal consent, elected perpetual Dictator, with the most ample powers to act as he judged best for the interests of the country. His government was quite patriarchal: he required no large standing army to overawe the people, who were only too willing to follow his injunctions; his military force was not larger than was necessary to form a sort of custom-house guard round the coast, as well as to prevent the ingress of the many adventurers and partisans from the adjoining provinces who sought to disturb the system he had established. He had previously followed the legal profession, and, as a civilian educated under the Jesuits, his policy was based on a desire for peaceful quiet; and in all his measures he sought to prevent the contagion of that military turbulence which agitated the surrounding states, and which kept them in

a constant state of anarchy. Paraguay, when under the Spanish rule, had been dependent upon those states for most of the necessaries of life, which they exchanged for its Yerba and its tobacco; and Francia's earliest efforts were directed so as to render the country independent of this foreign supply and to produce whatever was essential for its own requirements. The only persons who strove to thwart his measures were the old Spaniards, who clung to the hope of seeing the power of Spain restored, and also the many emissaries clandestinely sent from the neighbouring states to allure the people into another policy, and to restore the former state of trade, on which they had depended. Against these emissaries, acting in concert with General Artigas, Governor of Entre-rios, who invaded Paraguay and laid waste parts of the country, the most stringent measures were employed: they were threatened with the extreme penalty of the law, if caught in their intrigues; and several daring adventurers, though forewarned of the consequences, were taken, and suffered the punishment of death as examples to others. The many tales raised against Francia for cruelty and murder are solely traceable to these severe measures, which he considered just and necessary. Towards the natives no such severity was required; for his administration of the law was simple, firm, and just: had it been otherwise, it would have been impossible for him to have maintained his authority for so many years without a standing army; and we have the strongest evidence of this truth in the fact that, during his long administration, notwithstanding the efforts of many foreign emissaries, no attempt was ever made among the people to revolt; no Paraguayan endeavoured to control his power, or change the system he adopted. We have the evidence of Mr. Robertson (one who suffered most from the suspension in the trade in Yerba, and who was in consequence one of the foremost among his detractors) that during his residence of two years in Paraguay, under Francia's rule, no instance of the punishment of death was known.

Under the Spanish rule, the Paraguayans had cultivated, besides the Yerba, little beyond a fine kind of tobacco (considered equal to that of Havanna, and much appreciated in Chile and Peru), and also some sugar and yucca (yams). They were soon induced by Francia to extend their agricultural pursuits, to cultivate rice, maize, and other vegetables, on a large scale, and to raise a sufficient quantity of yucca to satisfy the general consumption. Other vegetable products, hitherto scarcely known in the country, soon covered the plains: cotton, formerly procured from Corrientes, was now cultivated to some extent; more attention was paid to the rearing of cattle and horses, instead of importing them from Entrerios, so that in a few years

they were able to export a considerable surplus above their own requirements; and they now made cotton cloths for their garments, in lieu of the woollen ponchos obtained from Cordova. The Dictator for many years was assiduous in his endeavours to establish permanently this system of industry, which necessarily supplanted in great measure the trade in Yerba; he even employed coercive measures in order to carry it into effect; and in 1829 he decreed that the possessor of every house or farm should sow a certain quantity of maize, upon the product of which every one was bound to contribute 4 per cent. to the state, no excuse being allowed; and those who sought to evade this obligation became subject to heavy penalties.

I had many opportunities, during my residence in Buenos Ayres in 1825-1827, of conversing with several persons who had been in Paraguay, but I never met with any one who had witnessed the atrocities currently ascribed to the Dictator: from all I could learn, I became convinced that the character so generally assigned to Doctor Francia was not founded in truth, and that, owing to political jealousy and personal dislike, he has been unjustly maligned. He ought, on the contrary, to be looked upon as a great benefactor to his country; and though he had recourse to a policy of restraint, which in a more advanced state of society would not have been tolerated, it was certainly one well calculated, in the actual state of Paraguay, to attain the objects he had so much at heart, and in which he gradually succeeded. The good results of these wise measures are well attested by the prosperous advancement of the country up to the present time. His success naturally raised up against him a host of irreconcilable enemies in all the Argentine Provinces, who strove to blacken his character and vilify his conduct. All these Provinces, suffering under the extinction of the trade in Yerba, were leagued against the policy of Francia; but their attention being too much occupied in their constant internecine wars, they had little time or force to spare in the attempt to revolutionize Paraguay. At length, however, the Governor-in-chief of Entrerios, having made peace with the other provinces, turned his attention to that object, and endeavoured at the same time to establish settlements at the former Jesuit Missions (then almost depopulated), with the view of cultivating the trade in Yerba. And we now come to a knowledge of the state of affairs that existed when the celebrated Bonpland visited the River Plate, and how the subsequent phases of his life became connected with the history of the trade in Yerba.

The fall of the emperor Napoleon and the re-establishment of the Bourbon dynasty in France were events most galling to Bonpland, and he resolved to seek an abode in one of the repub-

lican States of South America. Accordingly he reached Buenos Ayres in 1817, with a nominal appointment of Professor of Natural History in that capital. About the same time, a considerable number of his countrymen, from similar causes, settled themselves in the Argentine Provinces, at which period the internecine wars before alluded to were raging furiously. Many of these Frenchmen became active partisans in these quarrels, and, either by their direct or indirect interference, soon came under the ban of the several opposing chiefs. When I passed through Buenos Ayres, in 1819, I saw Bonpland; he was then under great excitement in consequence of the execution of two of his companions, who, having been detected in assisting the military chief Carrera, were accordingly sentenced to be shot. It was in the same year that Bonpland established himself near Candelaria, one of the old Jesuit Missions on the left bank of the Parana, contiguous to Paraguay, where he formed a considerable establishment, chiefly, as I understood, with a view to the production of and trade in Yerba, under the special auspices and protection of the Governor-general Artigas, who, as I have before mentioned, intended ultimately to carry out his designs against Paraguay. In the following year, General Ramirez, who commanded Artigas's forces, being bought over by the rival Presidents of Buenos Ayres and Santa Fé, revolted against his chief. Artigas, being hard pressed and deserted by his supporters, knowing also that if he fell into his enemies' hands he would be immediately sacrificed, resolved to beg an asylum in Paraguay; and he obtained this permission, in 1820, from Doctor Francia, for himself and a thousand of his faithful followers, who were distributed in different parts of the country, and to whom portions of land were assigned, upon condition of cultivating them. The Dictator generously gave his rival a monthly pension, together with a house and lands in the village of Caragaty, eighty-five leagues N.E. of Assuncion, where he resigned himself to peaceful agricultural pursuits, and lived in much enjoyment till the period of his death, ten years afterwards.

In 1821, Ramirez, being then at peace with the other Argentine provinces, turned his attention to the invasion of Paraguay, with which view he collected a considerable body of troops, in order to force that country to adopt his policy. While these preparations were going forwards, political considerations of greater moment induced Ramirez to suspend his project: he now marched his forces to the southward, to wage war against the Governors of Buenos Ayres and Santa Fé; and after a severe campaign, he was at last defeated, taken prisoner, and executed. Francia, thus relieved of his fears for a while, proceeded to adopt such precautionary measures as he conceived

would place his country for the future in greater security; and in these measures Bonpland became deeply concerned.

This celebrated botanist Doctor Francia suspected of being in concert with General Ramirez, knowing also that he had previously been the friend of General Artigas. Francia was well informed of all the combinations making against him; and his conviction that Bonpland was implicated in these measures appears to have been heightened by the formal application which the latter made to him, about this period, to be allowed to enter into commercial relations with Itapuan, on the opposite coast of Paraguay, presenting at the same time, in earnest of his intentions, a contract he had formed with an Indian cacique for the purpose in view. Had Bonpland abstained from meddling with political questions, it is probable he would never have been disturbed; but after Ramirez had given up his intended invasion, Francia availed himself of the opportunity by sending a force of 400 men across the Parana to Candelaria, near the place of Bonpland's residence, to destroy that post, which he considered to be the nucleus whence hostile demonstrations might at any future period be formed against his country: he likewise ordered them to make prisoners of certain persons, among whom was the former companion of Humboldt. These instructions were implicitly carried into effect, and Bonpland was conveyed a prisoner to Assuncion. The Dictator received him with every demonstration of respect and kindness, explaining the motives which justified him in the course he had taken, and offered him any place he might select in the interior, as he had previously done to Artigas. Bonpland chose to fix himself at Santa Maria, to the S.E. of Assuncion, where he enjoyed full liberty, and was subject to no other restraint than the obligation of remaining peaceably in its neighbourhood. Here he settled upon the farm assigned to him, and practised also as a physician. He appears to have lived there in great contentment for ten years, at the end of which time he received from Francia full liberty to depart whenever he pleased. The best proof that Bonpland was satisfied with the treatment he received, is that he never protested against his captivity, and that he refused (I believe, for a period of two years) to avail himself of the liberty given to him; and it is certain that he then declined the many pressing invitations from Buenos Ayres, sent to him by the foreign ambassadors and other distinguished persons, who had greatly interested themselves in his welfare. At length he made a visit to the River Plate, but remained there only a very short time, for he soon returned to the Missions, and finally established himself on his former estate of S. Anna de la Restauracion, not far from Candelaria in Corrientes, bordering upon Paraguay, where he lived, much respected by all, till his death in 1858.

From his long residence in the country, and his great experience in all that relates to the preparation of Yerba, no one had better opportunities than Bonpland to identify the real species from which that article of consumption is manufactured.

The system of the merchants in their agreement with the 'habilitadores' who undertake the quest of Yerba in the distant forests of Paraguay, the manner of hiring the Indian labourers for this work, the preparations for feeding them during their long bivouac, the mode of collecting and drying the branches, roasting and separating the leaves, pounding them, and packing the Yerba, thus prepared, in hide bags, are well described in Mr. Lambert's memoir on the *Ilex Paraguayensis*, and in Mr. Robertson's 'Letters from Paraguay, and Francia's Reign of Terror.' The same rude methods were employed in all the Spanish Missions, and also in the Brazilian settlements, up to a very recent period; but of late years more improved processes, upon a much larger scale, have been brought into use about Curitíba; but in the province of Rio Grande the old system is still continued. At Curitíba, I am told, the leaves are now roasted more equally, in cast-iron pans set in brickwork, much after the manner in which tea is prepared in China, except that the pans are much larger. When the leaves are sufficiently dried, they are pounded in stamping-mills worked by water-power or steam-engines, and packed in bags by means of presses. The quality of the Yerba has thus been much improved.

We owe to St.-Hilaire the first outline of the botanical features of the tree, growing about Curitíba, that yields the Yerba: it was only a short diagnosis, published in 1822*, when he ascertained it to be a species of *Ilex*, which he considered identical with the Paraguay plant, and which was named inaccurately, through a typographical error, *Ilex Paraguariensis*†, a name he afterwards abandoned in 1824 for that of *Ilex Matte*‡; he, however, resumed the former name in 1833§. In the meanwhile, Mr. Lambert, in 1824||, gave a much fuller description of the plant, accompanied by a good drawing made from specimens sent from Buenos Ayres, and probably obtained from one of the Spanish Missions: he called it *Ilex Paraguensis*.

* Mém. Mus. ix. 351; Spreng. Syst. iv. cur. post. p. 48.

† Dr. Reisseck (Fl. Bras. 28. p. 115) thinks the word "Paraguariensis ita forsan rectius scribitur pro Paraguayensis;" but this cannot be. The word is unquestionably used adjectively for the country Paraguay. There is no place known by the name of Paraguari. St.-Hilaire found his plant near Paranagua, but that could never have suggested the word in question. It was at first, no doubt, a mere typographical error, which St.-Hilaire did not think necessary to correct afterwards.

‡ Hist. des Plantes remarq. de Brésil et Paraguay, i. Introd. p. xli.

§ Voy. Diamant, i. 273.

|| Lambert, Pin.

I had always been impressed with the conviction that the different qualities of Yerba brought to market were prepared from different species of *Ilex*; and hence the doubt occurred to me whether the plant described by St.-Hilaire from Curitiba be really identical with the true Paraguayan type. The grounds for this surmise were founded upon the dissimilar colour of the two Yervas, the difference in their flavour, and the higher price always obtained for the Yerba de Paraguay compared with the Yerba de Paranaçuá. The short diagnosis of St.-Hilaire answered equally to several species that I had seen. Sir Wm. Hooker, in 1842*, gave a very interesting account of the Yerba, describing also the *maté* or cup, formed out of a small calabash (*cuy*), in which the infusion is prepared, and out of which it is drawn into the mouth through a *bombilla*; he added the characters of the different varieties, which he considered identical with the *Ilex Paraguayensis*, and of these he gave two excellent figures with analyses. This memoir, instead of solving my doubts, only rendered the question still more enigmatical; for in it is classed, as a mere variety, a plant which I brought from Rio de Janeiro, which I found growing in the Botanic Gardens there, and which I was assured by the Rev. Frey Leandro, at that time Director of those Gardens, was the "Arbol do Maté," or 'Paraguay Tea-tree.' This plant, which is well figured in Sir Wm. Hooker's memoir †, appeared to me quite a distinct species, marked by very peculiar characters.

Anxious to remove this doubt, I applied to my friend Senr. Conselheiro Candido Baptista d'Oliveira, soon after I learned of his appointment as Director of the Botanic Garden, and begged of him to ascertain whether that plant was really identical with the tree which yields the true Yerba de Paraguay, as I had been assured twenty years before, or a different species, and to send me, if possible, authentic specimens of both. He most obligingly forwarded me a fresh specimen of the tree still growing in Rio de Janeiro, and at the same time transmitted my application to M. Bonpland, as the most competent authority on the subject, who, however, did not quite comprehend the object of my inquiry. This renowned botanist most kindly responded, and sent six different species, with their varieties, all collected in the Missions, and all alike used in the preparation of Yerba. This at once confirmed my suspicion that more than one species of *Ilex* is employed for that purpose; and as this fact is of some importance in the history of the subject, I will copy here *verbatim* the note of M. Bonpland which accompanied his specimens.

[To be continued.]

* Lond. Journ. Bot. i. 30.

† *Ibid.* i. 35, var. γ , tab. 3.